# Safety instructions
# VEGABAR B8*.IC/U/O/H/T
# VEGABAR B8*.VC
# Additional current output

IECEx TUN 13.0033 X

Ex ia IIC T6 … T1 Ga, Ga/Gb, Gb

CE 0044

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VEGA

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Please note:

These safety instructions are part of the documentation:

- VEGABAR 81
  - 45025 - 4 … 20 mA, 45018 - 4 … 20 mA/HART, 45020 - Profibus PA, 45021 - Foundation Fieldbus
- VEGABAR 82
  - 45027 - 4 … 20 mA, 45028 - 4 … 20 mA/HART, 45031 - Profibus PA, 45032 - Foundation Fieldbus
- VEGABAR 83
  - 45033 - 4 … 20 mA, 45034 - 4 … 20 mA/HART, 45037 - Profibus PA, 45038 - Foundation Fieldbus
- VEGABAR 86
  - 45506 - 4 … 20 mA, 45039 - 4 … 20 mA/HART, 45042 - Profibus PA, 45043 - Foundation Fieldbus
- VEGABAR 87
  - 45507 - 4 … 20 mA, 45044 - 4 … 20 mA/HART, 45047 - Profibus PA, 45048 - Foundation Fieldbus
- 48819 - Certificate of Conformity IECEx TUN 13.0033 X

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## 1 Area of applicability

These safety instructions apply to the pressuer transmitters VEGABAR B81/82/83/86/87.IC/U/O/H/T and VEGABAR B81/82/83/86/87.VC with integrated electronics H (4 … 20 mA/HART), A (4 … 20 mA/HART with SIL qualification) witht supplementary electronics (Z) according to Certificate of Conformity IECEx TUN 13.0033 X issue No. 1 (certificate number on the type label) and for all instruments with the number of the safety instruction (48818) on the type label.

## 2 General information

The pressure-based measuring instruments VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC are also used for pressure and level measurement in hazardous areas.

The measured products can also be combustible liquids, gases, mist or vapour.

The VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC consist of an electronics housing with integrated electronics module, a process connection element and a sensor, the pressure measuring cell with optionally connected chemical seal. As an option, the display and adjustment module can also be mounted.

The VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC are suitable for use in hazardous atmospheres of all combustible materials of explosion group IIA, IIB and IIC for applications requiring instruments of EPL-Ga, EPL-Ga/Gb or EPL-Gb.

If the VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC are installed and operated in hazardous areas, the general Ex installation regulations IEC 60079-14 as well as these safety instructions must be observed.

The operating instructions as well as the installation regulations and standards that apply for explosion protection of electrical systems must always be observed.

The installation of explosion-endangered systems must always be carried out by qualified personnel.

**EPL-Ga instrument**
The VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC are installed in hazardous areas requiring EPL-Ga instruments.

**EPL-Ga/Gb instrument**
The process connection element is installed in the separating wall, which separates areas in which EPL-Ga or EPL-Gb instruments are required. The electronics housing is installed in hazardous areas, requiring EPL-Gb instruments. The sensor is installed in hazardous areas requiring EPL-Ga instruments.

**EPL-Gb instrument**
The VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC are installed in hazardous areas requiring EPL-Gb instruments.

## 3 Technical data

**VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC with integrated electronics H (4 … 20 mA/HART) or A (4 … 20 mA/HART with SIL qualification) and with supplementary electronics (Z)**

| | |
|---|---|
| Supply and signal circuit I: (terminals 1[+], 2[-] in the "Ex-i" terminal compartment or plug connection) | In ignition protection type intrinsic safety Ex ia IIC/IIB<br>Only for connection to a certified, intrinsically safe circuit.<br>Maximum values:<br>● $U_i$ = 30 V<br>● $I_i$ = 131 mA<br>● $P_i$ = 983 mW<br>The effective internal capacitance $C_i$ is negligibly small.<br>In the version with permanently mounted connection cable, $C_{i\ wire/wire}$ = 150 pF/m and $C_{i\ wire/screen}$ = 270 pF/m must be taken into account.<br>The effective inner inductance $L_i$ is $L_i \leq 5$ µH. In the version with permanently mounted connection cable, $L_i$ = 0.62 µH/m must also be taken into account. |
| Power supply and signal circuit II: (terminal 7[+], 8[-] in the "Ex-i" terminal compartment) | In ignition protection type intrinsic safety Ex ia IIC/IIB<br>Only for connection to a certified, intrinsically safe circuit.<br>Maximum values:<br>● $U_i$ = 30 V<br>● $I_i$ = 131 mA<br>● $P_i$ = 983 mW<br>The effective internal capacitance $C_i$ is negligibly small.<br>In the version with permanently mounted connection cable, $C_{i\ wire/wire}$ = 150 pF/m and $C_{i\ wire/screen}$ = 270 pF/m must be taken into account.<br>The effective inner inductance $L_i$ is $L_i \leq 5$ µH. In the version with permanently mounted connection cable, $L_i$ = 0.62 µH/m must also be taken into account. |

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| | |
|---|---|
| Display and adjustment circuit: (plug connection of the double chamber housing) | In ignition protection type intrinsic safety Ex ia IIC<br>For connection to the intrinsically safe circuit of the associated external indicating instrument VEGADIS 61/81 (IECEx PTB 06.0048 X).<br>The rules for the interconnection of intrinsically safe circuits between VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC and the external indicating unit VEGADIS 61/81 are fulfilled, provided that the total inductance and total capacitance of the connection cable between VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC and the external indicating unit VEGADIS 61/81 $L_{cable}$ = 330 µH and $C_{cable}$ = 1.98 µF are not exceeded.<br>When using the delivered VEGA connection cable between VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC and the external indicating unit VEGADIS 61/81, the following listed cable inductances $L_i$ and cable capacitances $C_i$ must be taken into account.<br>● $L_i$ = 0.62 µH/m<br>● $C_{i\ wire/wire}$ = 150 pF/m<br>● $C_{i\ wire/screen}$ = 270 pF/m |
| Circuit for the display and adjustment module: (spring contacts in the "Ex-i" electronics compartment) | In ignition protection type intrinsic safety Ex ia IIC<br>For connection to the display and adjustment module PLICSCOM or VEGACONNECT. |

**VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC Version with separate cable outlet (all electronics)**

| | |
|---|---|
| Circuit between sensor unit and external electronics (terminal 1- yellow, terminal 2 - white, terminal 3 - red, terminal 4 - black) | In ignition protection type intrinsic safety Ex ia IIC<br>With VEGABAR B8*.IC in the version with fix mounted cable on the sensor unit and external electronics, the supplied cable between the external housing and the sensor unit must not exceed a length of 180 m. |

The intrinsically safe circuits for external connections are electrically separated from parts which can be grounded.

The intrinsically safe circuits to the sensor are galvanically connected to ground potential.

The metallic parts of VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC are electrically connected with the earth terminals.

For applications requiring equipment of type EPL-Ga or EPL-Ga/Gb, the intrinsically safe power supply and signal circuit must correspond to protection class ia.

For applications requiring EPL-Ga resp. EPL-Ga/Gb instruments the VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC is preferably connected to appropriate instruments with electrically isolated, intrinsically safe circuits.

## 4 Application conditions

**VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC with integrated electronics Z (4 … 20 mA), H (4 … 20 mA/HART) or A (4 … 20 mA/HART with SIL qualification), S, T (electronic differential pressure measurement), P (Profibus PA), F (Foundation Fieldbus)**

The max. permissible ambient temperatures depending on the temperature classes are specified in

the following tables.

**EPL-Ga instrument**

| Temperature class | Ambient temperature on the sensor and electronics |
|---|---|
| T6 | -20 … +23 °C |
| T5, T4, T3, T2, T1 | -20 … +60 °C |

For applications requiring instruments of EPL-Ga the process pressure of the media must be between 0.8 … 1.1 bar. The application conditions when operating in the absence of explosive mixtures can be found in the manufacturer information.

**EPL-Ga/Gb instrument**

| Temperature class | Ambient temperature on the electronics | Product temperature on the sensor |
|---|---|---|
| T6 | -50 … +39 °C | -20 … +23 °C |
| T5, T4, T3, T2, T1 | -50 … +70 °C | -20 … +60 °C |

For applications requiring EPL-Ga/Gb instruments the process pressure of the media must be between 0.8 … 1.1 bar. If the VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC are operated at temperatures higher than those specified in the above table, please make sure through appropriate measures that there is no danger of ignition from the hot surfaces. The maximum temperature on the electronics/housing should not exceed the values specified in the above table. The application conditions during operation in areas with no explosive mixtures are stated in the manufacturer information.

**EPL-Gb instrument, VEGABAR 82, VEGABAR 83 with METEC measuring cell**

| Temperature class | Ambient temperature on the electronics (Zone 1) | Product temperature range (sensor, zone 1) |
|---|---|---|
| T6 | -50 … +39 °C | -50 … +39 °C |
| T5 | -50 … +70 °C | -50 … +100 °C |
| T4 | -50 … +50 °C | -50 … +135 °C |
| T3, T2, T1 | -50 … +50 °C | -50 … +200 °C |

**EPL-Gb instrument, VEGABAR 83 version with piezoresistive/strain gauge measuring cell, version without cooling element**

| Temperature class | Ambient temperature on the electronics (Zone 1) | Product temperature range (sensor, zone 1) |
|---|---|---|
| T6 | -50 … +39 °C | -50 … +39 °C |
| T5 | -50 … +70 °C | -50 … +85 °C |
| T4 | -50 … +40 °C | -50 … +105 °C |
| T4, T3, T2, T1 | -50 … +30 °C | -50 … +120 °C |

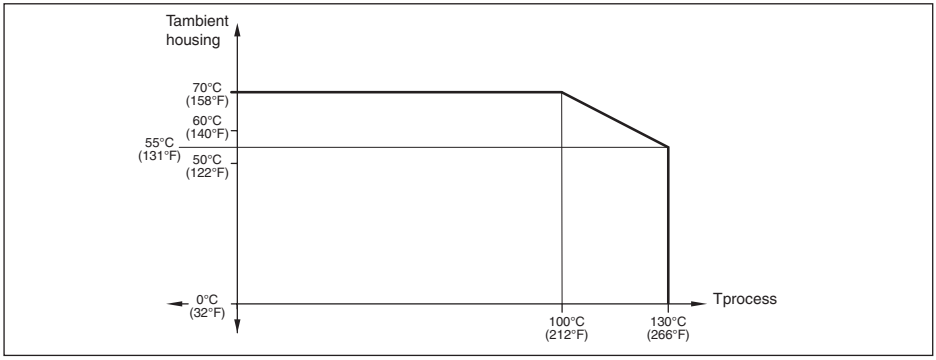
**EPL-Gb instrument, VEGABAR 81, VEGABAR 83 version with piezoresistive/strain gauge measuring cell, version with cooling element**

| Temperature class | Ambient temperature on the electronics (Zone 1) | Product temperature range (sensor, zone 1) |
|---|---|---|
| T6 | -50 … +39 °C | -50 … +39 °C |
| T5 | -50 … +70 °C | -50 … +85 °C |
| T4 | -50 … +50 °C | -50 … +120 °C |
| T3, T2, T1 | -50 … +40 °C | -50 … +150 °C |

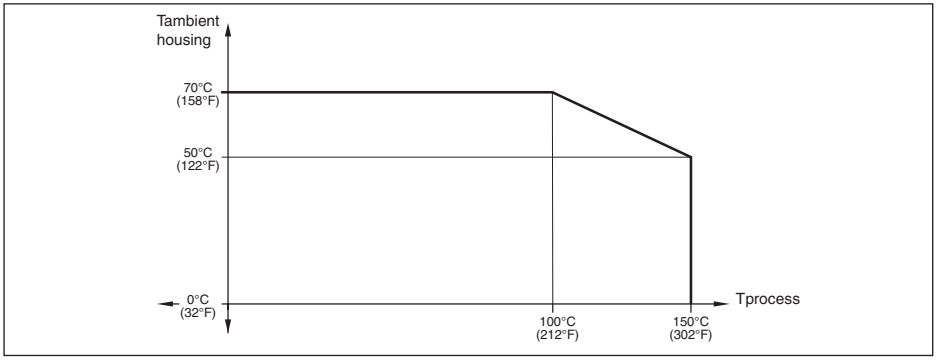
If the VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC are operated at temperatures higher than those specified in the above table, please make sure through appropriate measures that there is no danger of ignition from the hot surfaces. The max. permissible temperature on the electronics/housing should not exceed the values specified in the above table. The application conditions during operation with no explosive mixtures present are stated in the manufacturer information.

**Temperature derating**

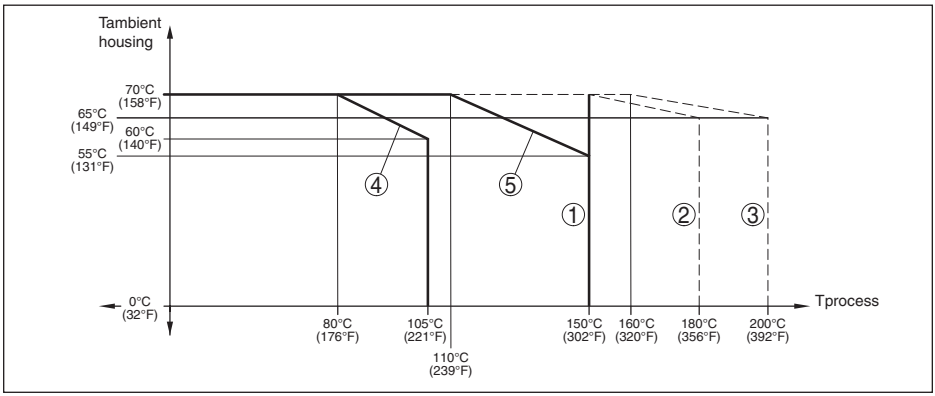
**VEGABAR 82, version process temperature +130 °C**




**VEGABAR 82, version process temperature +150 °C**



**VEGABAR 81, VEGABAR 83**




*1 Version: METEC measuring cell, process temperature max. 150 °C*
*2 Version: METEC measuring cell, process temperature max. 180 °C*
*3 Version: METEC measuring cell, process temperature max. 200 °C*
*4 Version: Piezoresistive/strain gauge measuring cell, without cooling element*
*5 Version: Piezoresistive/strain gauge measuring cell, with cooling element*

The temperature ranges for operation specified in the operating instruction must not be exceeded.

## 5 Protection against static electricity

The VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC in versions with electrostatically chargeable plastic parts, such as e.g. plastic housing, metal housing with inspection window, with plastic coated sensors, suspension cable or suspension hose, distance tube or connection cable with the separated version, a caution label points out the safety measures that must be taken with regard to electrostatic charges during operation.

Caution: Plastic parts! Danger of electrostatic charging!

- Avoid friction
- No dry cleaning
- Do not mount in areas with flowing, non-conductive products

## 6 Use of an overvoltage arrester

If necessary, a suitable overvoltage arrester can be connected in front of the VEGABAR B8*. IC/U/O/H/T, VEGABAR B8*.VC.

When used as EPL-Ga or EPL-Ga/Gb instrument, as far as necessary analogue, a suitable overvoltage arrester must be connected in front as protection against voltage surges according to IEC 60079-14 chapter 12.3.

## 7 Grounding

In order to avoid the danger of electrostatic charging of the metallic parts, the VEGABAR B8*. IC/U/O/H/T, VEGABAR B8*.VC must be electrostatically connected to the local potential equalisation (transfer resistance ≤ 1 MΩ), e.g. via the ground terminal, when used as EPL-Ga instrument or

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EPL-Ga/Gb instrument.

## 8 Impact and friction sparks

When used as EPL-Ga or EPL-Ga/Gb instruments, the VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC in aluminium/titanium versions must be mounted in such a way that sparks from impact and friction between aluminium/titanium and steel (except stainless steel, if the presence of rust particles can be excluded) cannot occur.

## 9 Material resistance

For applications requiring instruments of type EPL-Ga or EPL-Ga/Gb the VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC must only be used in products against which the wetted materials are sufficiently resistant.

## 10 Mounting with external indicating unit VEGADIS 61/81

The intrinsically safe signal circuit between VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC and the external indicating unit VEGADIS 61/81 should be set up without grounding. The required insulation voltage is > 500 V AC. When using the VEGA connection cable included with the delivery, this requirement is fulfilled. If grounding of the cable screen is required, it must be carried out according to IEC 60079-14 paragr. 12.2.2.3.

## 11 Installation/mounting

The VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC have to be mounted such that the sensor is effectively secured against touching the vessel wall, under consideration of other vessel installations and flow conditions in the vessel. This applies especially to suspension pressure transmitters and versions with distance tube lengths over 3 m.

## 12 Installation of the VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC with separate housing

With the version with separate housing of the pressure transmitter VEGABAR B8*.IC/U/O/H/T, VEGABAR B8*.VC, the potential equalization must be previded in the complete range of the connection cable between electronics housing and transmitter housing.

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Printing date:

All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.
Subject to change without prior notice

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